CHAPTER THREE

TRAINING OF BUS OPERATORS

New bus operators routinely receive basic training in vehicle operation, customer service, and system knowledge. Experienced operators may also receive periodic refresher training or organizational development training and many operators are given remedial training as needed.

NEW HIRE TRAINING

With 63 percent of all new hires coming from a nontransit background, entry-level training constitutes a significant concern for all transit organizations. In addition to the organizational orientation required for all new hires, transit operators must frequently be taught professional driving skills from the ground up.

Survey respondents indicated that their new hire training programs last anywhere from 10 to 60 days, with the average being 32 days. Factors influencing the length of training time include the size of the system, scope of equipment, an individual's transit and/or driving experience, scope of organizational curriculum, and the organization's choice of focus on training elements. Pressing operator staffing concerns can sometimes lead agencies to shorten training by focusing solely on key driving and customer service skill areas. In this survey, bigger agencies were less likely to adjust the length of training than smaller agencies, but were also less likely to have indicated that they had a written training curriculum.

Of the agencies that do adjust training length, Bay Metro Transit finds that they provide the most adjustment in helping trainees to get their CDL and in helping them to acquire the requisite driving skills. Previously, Montebello Bus Lines required that trainees learn and drive every route, but more recently they have been able to trim their training down to 4.5 weeks by requiring trainees to learn and drive the major routes they would be likely to first drive in service. The Transit Authority of Northern Kentucky considers their bus operators to be trainees until they've completed their probationary period, which is another 150 to 210 days.

Agencies that provided longer time on in-bus service training were less likely to provide interpersonal relationships training in communication or in conflict resolution. This might imply a trade-off between vehicle-focused service training and other skills training in the classroom.

During survey analysis, it was found that training duration is significantly related to voluntary turnover, but not to involuntary or overall turnover. Specifically, it was found that agencies with longer training duration were more likely to report higher voluntary turnover rates. This finding may simply be an anomaly due to the small number of survey respondents or it could be indicative of a real effect. Perhaps the longer training period creates a more realistic job preview for trainees, so that they are more likely to self-select than are trainees in shorter programs. Another potential explanation for this finding could be that trainees become frustrated with longer training programs (discomfort with classroom training, concerns with relatively lower pay, etc.). It is possible that longer training duration, by virtue of its length or its lack of job guarantee, might correlate with trainees receiving alternate job offers.

TRAINING COMPETENCIES

All agencies reported having training competencies for safe driving practices, and the majority (over 90 percent) indicated that they had competencies dealing with policy, procedure, customer support, and system knowledge. A listing of training competencies by the proportion of agencies that reported them is shown in Table 4.

TABLE 4
COMPETENCIES TRAINED FOR

Competency	No.	Percent
Safe driving practices	28	100
Knowledge of and adherence to policy and procedure	27	96
Radio communications	27	96
Schedule adherence	27	96
Interpersonal interactions with customers	26	93
Knowledge and handling of fares	26	93
Serving customers with disabilities	26	93
System (area) knowledge	26	93
Customer support	23	82
Interpersonal interactions with peers and staff	20	71
Personal health and fitness for duty	17	61
Written communication	17	61
Organizational knowledge	16	57

Note: Percentages based on 28 responses.

Eighteen percent of respondents do not train for customer support, interpersonal interactions with peers and staff, personal health and fitness for duty, written communication, and organizational knowledge competencies. According to one general manager, customer service skills are critical. He believes that customers and future customers

may appreciate improved bus technologies to some degree, but what will draw and keep customers is ultimately the service delivered by the person operating the vehicle. He meets with every new operator training class and tells them, "You probably told your friends this weekend that you were going to start training on Monday as a Bus Operator. Well, you're partly right. It's not about driving the big vehicle. It's about customers" (*14*).

HOW ARE THESE COMPETENCIES MEASURED?

Traditional measurement tools (observation checklists, paper and pencil tests, and peer assessment) are still the norm and are used by more than half of respondents; however, computer-based training, simulators, and computer tests are now being used by 15 to 22 percent of respondents. Table 5 shows the standard tools used to measure training impacts and the proportion of agencies that reported using each of the techniques.

TABLE 5
USE OF STANDARD MEASUREMENT TOOLS FOR TRAINING EFFECTIVENESS

Type of Measurement	Percent
Observation with checklist	92
Paper and pencil tests	81
Peer assessment	59
Probationary operator statistics	52
Observation with pass/fail criterion	41
Training turnover	26
Computer-based training	22
Computer tests	18
Simulators	15
Other (jeopardy, closed course driving)	7

Note: Percentages based on 27 responses.

HOW IS TRAINING ACCOMPLISHED?

All respondents reported using classroom and on-the-bus (not-in-service) time for their new hire bus operator training. Ninety-six percent of respondents indicated that their training includes time on buses in service, and 31 percent reported using some kind of simulation method such as computers, simulators, or other mechanical training aids.

Figure 5 presents the training methods as reported by survey respondents, along with the agency personnel responsible for administering that training method. Classroom training is handled mostly by a full-time, professional training staff member (trainer), although as many as 20 percent of respondents indicated that classroom training was also provided by bus operator trainers, in-service operators, and other agency personnel. Classroom training appears to be the domain of the full-time professional training staff, whereas on-the-bus (not-in-service) training is primarily delivered by a professional trainer, a bus operator assigned to training, or a combination of the two.

In-service bus training is handled mostly by in-service operators; however, 20 percent of respondents reported using trainers (either separately or in combination), and 10 percent of respondents also used operators assigned to the training department. For the 30 percent of the agencies that did offer simulation training, all indicated that it was provided by trainers.

San Diego Transit has developed and implemented three interactive CD-ROM driver training programs and replaced a seniority-based system with an employee performance and competence program. Each of the interactive

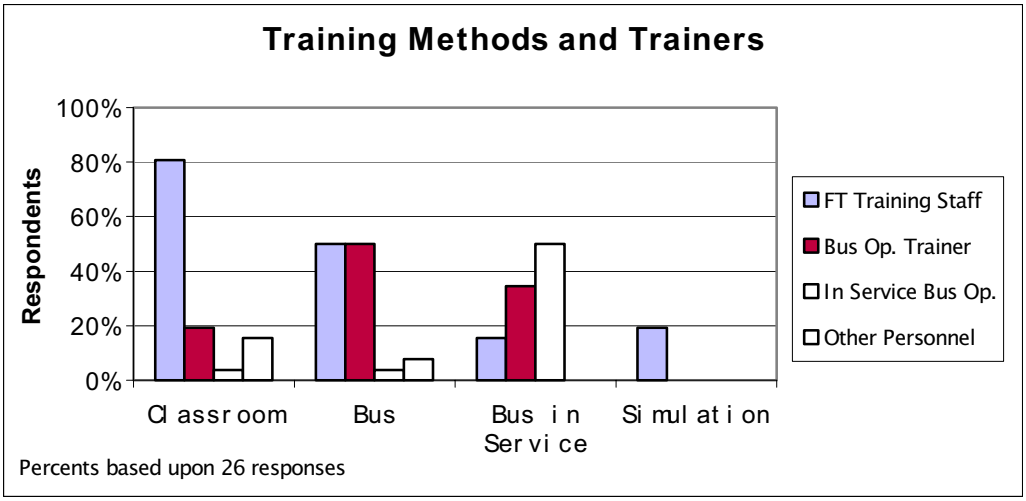

FIGURE 5 Training method use and type of user.

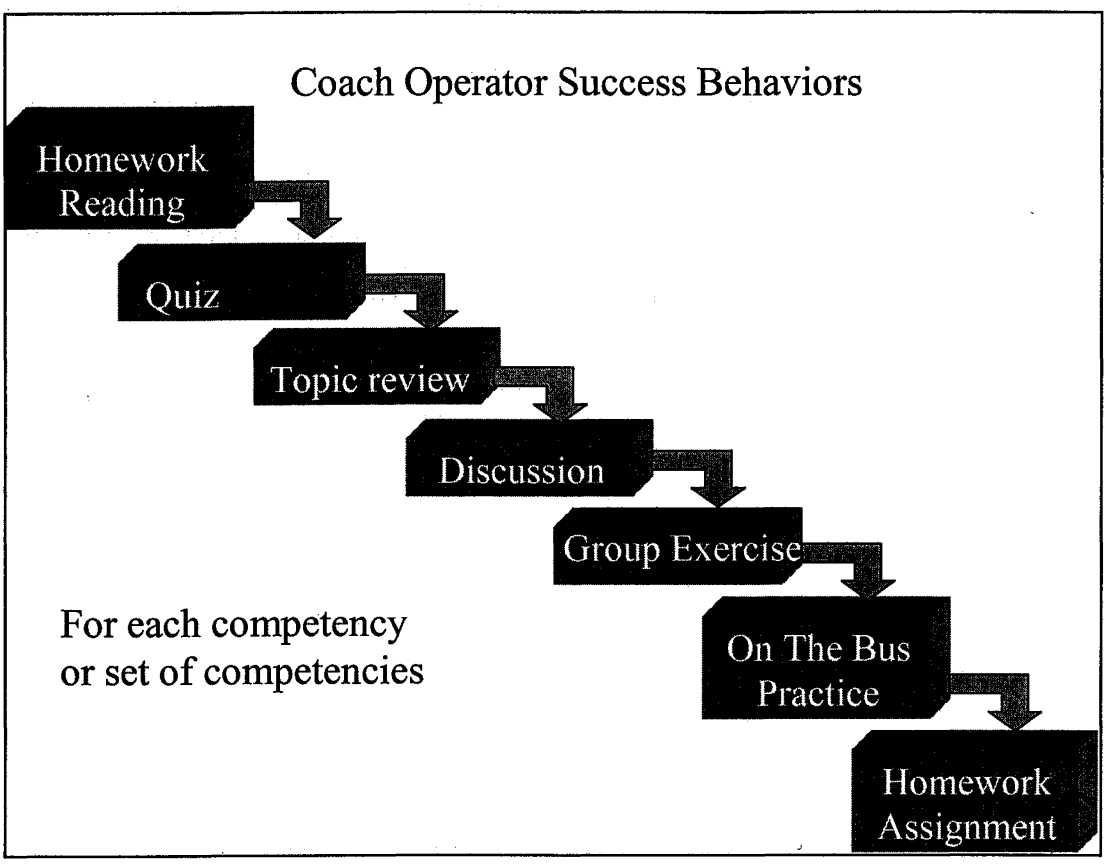

FIGURE 6 The Orange County Transportation Agency's training competency program.

modules in each program concludes with required comprehension test questions. When questions are answered incorrectly, the program loops the student back through a review of the module until the student achieves 100 percent comprehension and can go on to the next module.

The first program, "Have A Nice Day," is a four-module interactive, customer service training program, developed to help operators learn how to deal with difficult people and avoid violence while on duty. This program includes tips for operators before and after they begin their rounds on how to be more completely aware of their environment. It covers what constitutes an attack and provides some self-defense strategies. Other programs include a CD entitled "Smart Driving," which is a comprehensive defensive driving training program covering pre-trip to actual on-the-road driving and another CD, "The Professional," which includes training on bus inspections and customer service, and even includes some stretching exercises. These programs are currently available through the National Transit Institute (NTI). More than 150 transit agencies are using these computer-based training programs as a part of their training programs. Madison Metro Transit in Madison, Wisconsin, has recently implemented the bus operator training program available on a CD format from the U.S. Transportation Safety Institute.

In conjunction with NTI, San Diego is currently developing a program to help individuals train for their CDLs. San Diego plans to use this as a recruitment tool and also intends to provide the program to applicant-flow agencies like Job Service to be used as a screening tool for evaluating interest and ability.

The Orange County Transportation Authority recently revamped its training program to ensure consistency between training and the real expectations from operators on the road. To this end, a cross-functional team that included trainers, operations staff, coach operators, and union representatives was assembled to review the competencies and training design. Two members of this team (representing the operations and training departments) rewrote the "Coach Operator Handbook" so that it would serve the dual purpose of being the training manual and the policy manual. The agency's training program also incorporates adult learning research, which adults seem to learn in many different ways, including linguistic, logical–mathematical, spatial, musical, kinesthetic, interpersonal, and intrapersonal. They developed a training design with which to approach the delivery of each competency or set of competencies trained for. Their design for a typical training day (see Figure 6) was developed in an attempt to address each of the different learning modes on every set of competencies to be trained.

Simulators

The New Jersey Transit (NJT) system and agencies in Cleveland, Ohio; Orange County, California; and Atlanta, Georgia, are using simulator technology to enhance training effectiveness and impact training costs over time (*16*). The first type of equipment is fully interactive. Called the Vehicle Maneuvering Trainer, the system is installed in a two-room configuration with a driver console in one room and a 1/16th-scale model of the driving course in another. The technology allows the driver to move along streets while practicing driving skills such as turning, using mirrors, backing up, and maintaining lanes. Operators are able to practice specific maneuvers on a repetitive basis until proficiency is achieved.

The second type of equipment is a semi-interactive system that uses multiple computer stations, each with its own operator cab, in a classroom setting. Trainees simultaneously observe a real-life driving course that is projected at the front of the room and they proceed through the course as if they were driving a real bus. As they do this, the computer tracks their performance. This system allows for multiple operators to be trained at the same time under varying road conditions and situations that would be impossible or dangerous to reproduce under real conditions, such as reacting to another vehicle running a red light or slamming on the brakes to avoid a fixed object.

NJT reports a two-day reduction in training time, training cost reductions of $37/per hour for equivalent road training, and an annual overall training cost savings of approximately $375,000. They have also observed a much quicker learning curve, a more timely weeding out of unsuitable operators, and a better ability to target specific skill needs in individual trainees and remediate them more efficiently. Additionally, they've found a substantial decrease in accident rates in service. NJT's Deputy General Manager of Operations noted that, "Traditional defensive driving instruction is typically based on showing films and expecting Operators to identify with hazardous situations . . . often, the response from trainees is 'that will never happen to me.' By using the simulators however, drivers learn that bad things can happen to anybody" (*16*). Operators who use the system testify to its realism and effectiveness.

The total installation costs for the two systems is approximately $1 million. NJT reports that the system is rapidly paying for itself in reduced training costs and through providing access to the systems to third party operators for a fee.

Training simulators have the potential to reduce costs and improve the effectiveness of training and training measurement, and will most certainly come into wider use by transit agencies. At the same time, however, there may be some disadvantages to simulators. Some agencies have found that simulators require substantial maintenance to keep them running, and that they are still labor intensive because training staff are required to be present during the simulations. In addition, some agencies have found that driving situations, environment, or weather conditions peculiar to their area are not consistently or accurately represented in the simulator's repertoire. Occasionally, some trainees have reported that they suffered from motion sickness from being in the simulator.

In 1996, the MTA NYCT Department of Buses wanted to use simulators but was unable to find any that met its needs. MTA NYCT had identified the disadvantages noted previously, plus it required simulators that operated in real time (not pre-recorded video and dioramas), were interactive with the students and provided immediate feedback, were specific to the type of environment bus operators would be working in, and used computer-generated imagery. To accomplish these objectives, MTA NYCT worked with a company with a long track record of military simulators and a bus manufacturer.

The simulator they developed was unveiled at the 1999 APTA Transit Expo. It has eight channels, which provides a 315-degree wraparound display, including real bus mirrors reflecting rear traffic displays. The traffic in the simulator is intelligent (meaning it interacts in real time with the bus) and the simulator has a driving station that allows an instructor (or another student) to control one of the other vehicles in the simulation. MTA NYCT uses this "part task driving station" to create real-time traffic situations to which the bus operator must respond.

In a study designed to test the effectiveness of the simulators, MTA NYCT trained 1,000 bus operators. All student drivers received exactly the same training and curriculums, except that 250 of these students were given simulator training in place of some of their on-the-bus training. They then measured the accident rate of those students in their first 90 days of driving following training and found lower accident rates with the simulator-trained group. Another interesting result of this study was that the simulator-trained students had an 18 percent washout rate in training, whereas the control group (nonsimulator trained) had a 28 percent washout rate. MTA NYCT has historically experienced a 28 percent training washout rate. The agency is looking forward to new applications of their simulator technology, which includes reconstruction of accidents and remedial training of operators who have had accidents. The accident rate findings of the MTA NYCT study are presented in Table 6.

At the April 2001 NTI meeting, MTA NYCT presented their study findings and recommendations to the industry. They recommended forming an Industry Advisory Group

TABLE 6
RESULTS OF MTA NYCT DEPARTMENT OF BUSES SIMULATOR STUDY

Type of Accident	Trained Without Simulator (%)	Trained Using Simulator (%)
Right-side	6.4	0
Left-side	7.1	1.2
Fixed-object	7.9	2.4

on simulator training, developing a full range of simulator products, augmenting current training curriculums, developing a train-the-trainer curriculum, implementing software upgrade programs, and advising the FTA to standardize regional training sites for simulator training. The Transit Cooperative Research Program at TRB has recently completed a study of simulators.

Other users of bus simulation systems, whose experiences will be valuable to examine over time, include: the Southeastern Pennsylvania Transportation Authority, Philadelphia; Delaware Transit Corporation in Wilmington; Greater Cleveland Regional Transit Authority; Hampton Roads Transit, Hampton, Virginia; CT Transit in Hartford (Connecticut), Transit District; Broward County Transit in Fort Lauderdale; Orange County Transportation Authority in Orange County, California; PACE in Chicago (*17*); and MTA NYCT Department of Buses (*15*).

Refresher and Update Training

Just 36 percent of surveyed agencies reported that they require their applicants to participate in annual refresher training. One of the descriptors of a career professional is the requirement for periodic update training to enhance skills and expand the depth of professional knowledge. For operators this includes updates to keep safety and service skills honed, introduction to and familiarization with new equipment, system enhancements, regulatory changes, and organizational development. The number of agencies and the types of required refresher training are provided in Table 7. Customer service and safe bus operations top the list followed by regulatory types of internal and external training. The small number of systems offering refresher training programs may indicate that agencies do not see a positive benefit-to-cost ratio in providing this type of training. The state of California mandates 8 hours of required training per year for each bus operator, but does not specify curriculum.

Remedial Training

In response to performance problems, bus operators may receive instruction in skill deficiencies. Table 8 lists the skill deficiencies that surveyed agencies report they most commonly address. Customer service and safety concerns again top the list. This is an area of training where some practitioners are reporting success with computer-based training. Efficiencies may be gained by having students work through relevant skill modules on the computer, then reviewing or practicing the skills with an instructor. This type of training design might be an efficient use of the instructor's time and an effective, alternative learning model for the student.

TABLE 7
AREAS OF REQUIRED REFRESHER TRAINING

Subject	No.
Customer service/working with the public	6
Safety and safe bus operations	5
Policy/procedure	2
Sexual harassment	2
ADA/diversity/sensitivity	2
Skill review	1
Post-accident procedures	1
Commercial driver's license	1
Train the trainer	1
Wheel-chair lift and restraining procedures	1
Radio communications	1
Dealing with injuries (blood-borne pathogens)	1
Update, operation and new vehicles, new routes, fares	1

Note: Based on 8 responses.

TABLE 8
INDIVIDUAL SKILL AND KNOWLEDGE AREAS TYPICALLY REQUIRING REMEDIAL TRAINING EFFORTS

Subject	No.
Customer service/interactions/PR/difficult customer	17
Defensive driving/safety/accident prevention	11
Accidents and post-accident behavior	6
ADA and ADA announcements	4
Turning and backing	4
Driving skills	3
Schedule adherence	3
Route retention	2
Operation of vehicle	1
New vehicle	1
Knowledge of daily function	1
Rules and procedures	1
Wheelchair restraints	1

Notes: ADA = Americans with Disabilities Act. Based on 24 responses.

TRANSITION TO WORK

The methods used by the surveyed agencies to transition operators from training to work are summarized in Table 9. The four choices, showing the highest perceived effectiveness and lowest cost, are those that involve personal interaction. The next four relate to work assignments. The use of mentors is perceived to be the most effective, least

TABLE 9
TECHNIQUES FOR TRANSITIONING OPERATORS TO WORK

Technique	Percent	Effectiveness	Cost	Effectiveness/ Cost
Assigned to mentor	**35**	**4.00**	**1.71**	**2.34**
Graduation transition ceremony	11	4.00	2.00	2.00
Assigned to supervisor	39	3.73	2.20	1.70
Probationary evaluation	92	3.73	2.30	1.62
Required session with training staff	20	4.13	2.56	1.61
Assigned to a senior bus operator	22	4.00	2.50	1.60
Assigned to extra board	74	3.58	2.39	1.50
Bid available work	59	3.33	2.25	1.48
Assigned to specific work designed for new bus operators	17	3.60	2.60	1.38
Follow-up or observation by training staff	77	3.72	2.88	1.29
Supervisor or trainer ride-alongs	42	3.73	3.00	1.24

Notes: Ranked beginning with most effective, least costly technique. Effectiveness scale ranges from 1 to 5, with 5 being the most effective. Based on 28 responses.

costly method of transition, and yet was used by only 35 percent of respondents.

MTA Long Island Bus has a mentoring program they believe is especially beneficial. They report that new operators appreciate having someone more experienced to communicate with. MTA Long Island Bus believes that their mentoring program has helped reduce turnover. More mentoring programs are highlighted in the discussion of retention section of this synthesis. A number of agencies also provide a graduation ceremony with light refreshments, individual recognition, and training completion certificates. MTA Long Island Bus believes that their graduation program helps trainees feel a sense of accomplishment and helps to mentally prepare them for the job.

Spouse or "significant other" training is offered by the UTA. During training, these individuals are invited to learn more about the job, the company, and its benefits. The program has helped spouses and significant others, the key nonwork support persons for a bus operator, to understand the expectations of the job and the reasons that the work hours are so variable. They are given to understand that the variable shifts are generally temporary and that more benefits and better work schedules will come with time. Bus operators benefit greatly from a supportive home environment and it is speculated that over time this support may help reduce trainee and new hire turnover. UTA believes that after receiving this training, trainee families are more supportive and can assist the new operator in dealing with challenges of the job.